Fig. 1

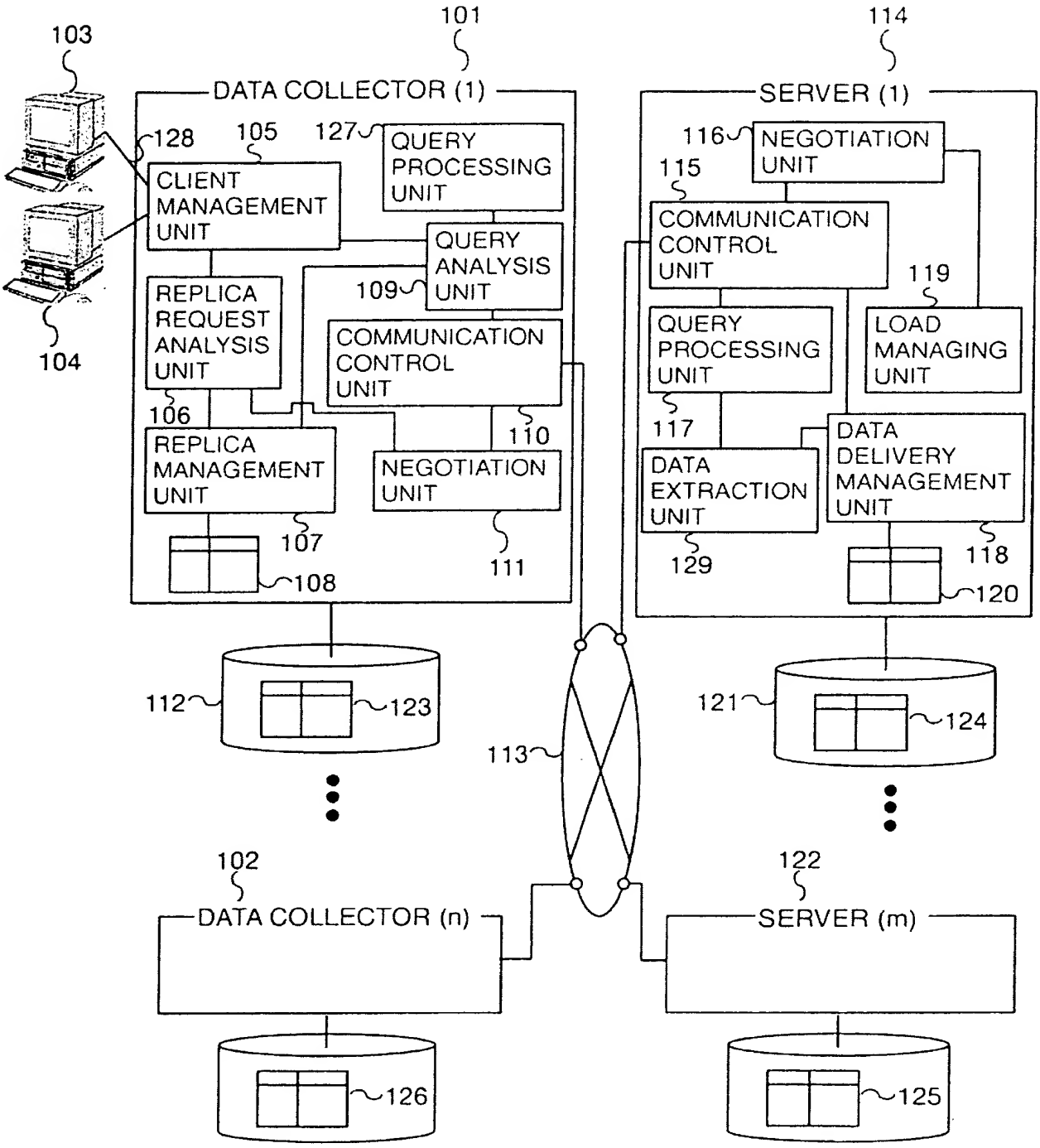

Fig. 2

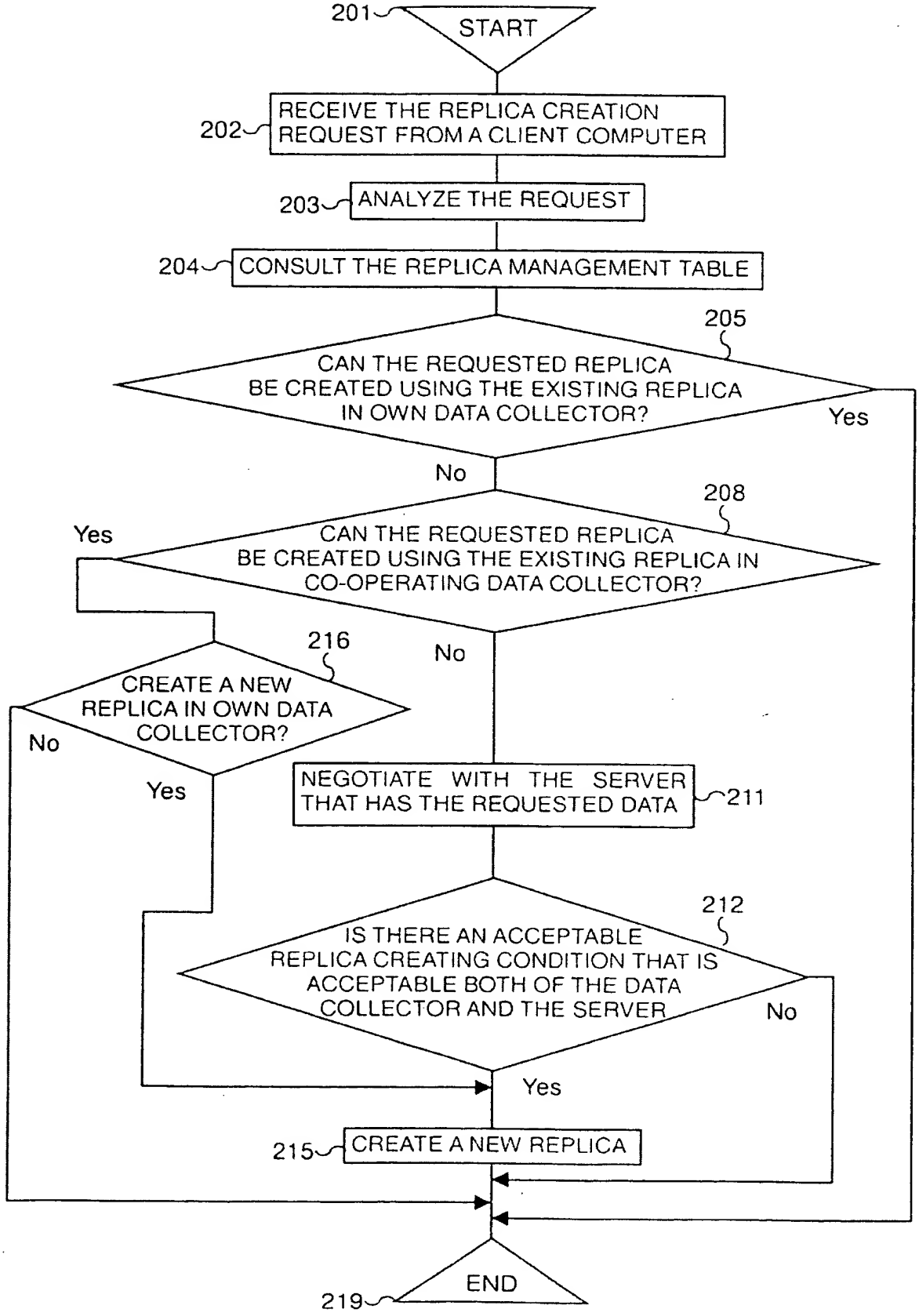

Fig. 3

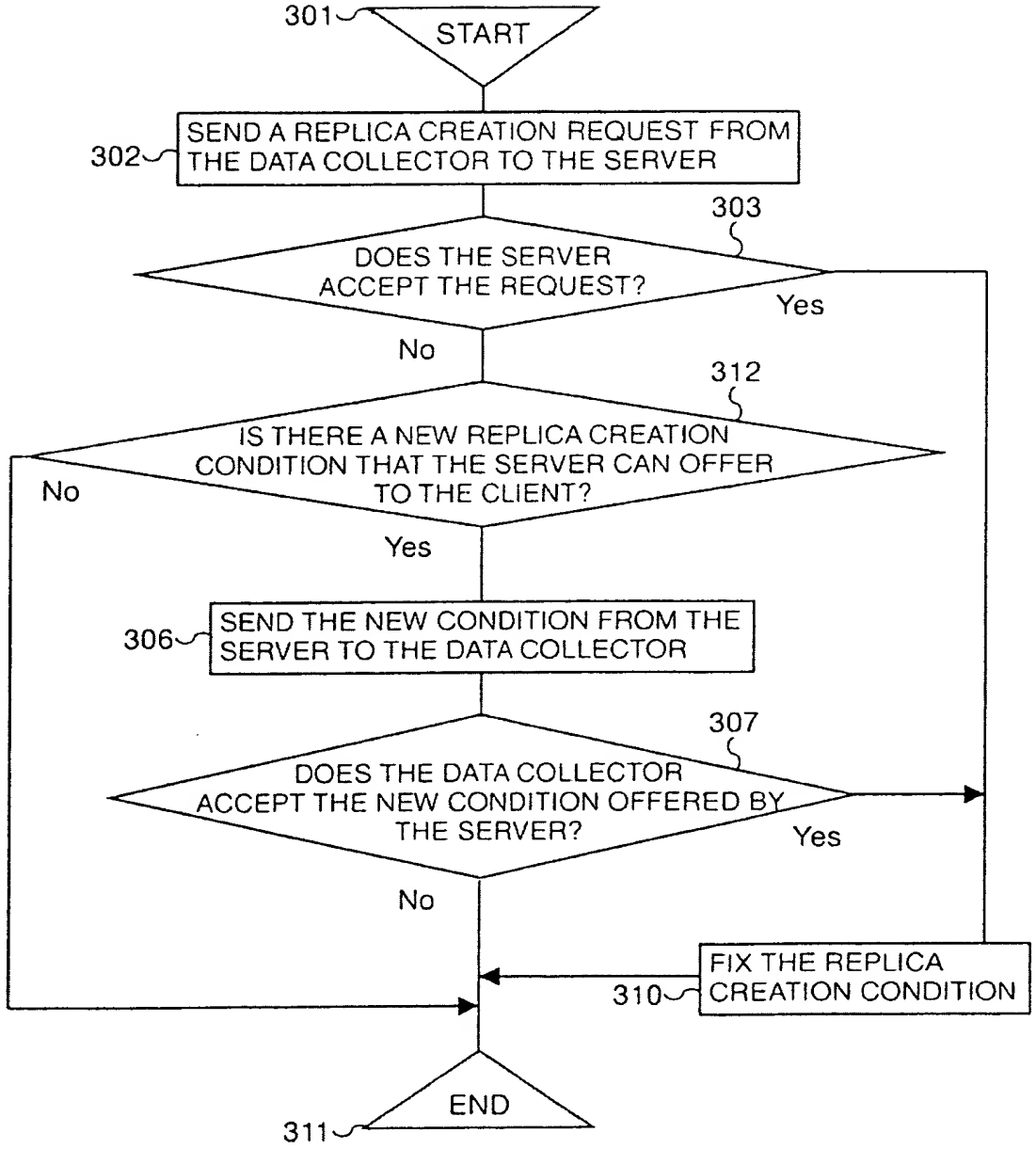

Fig. 4

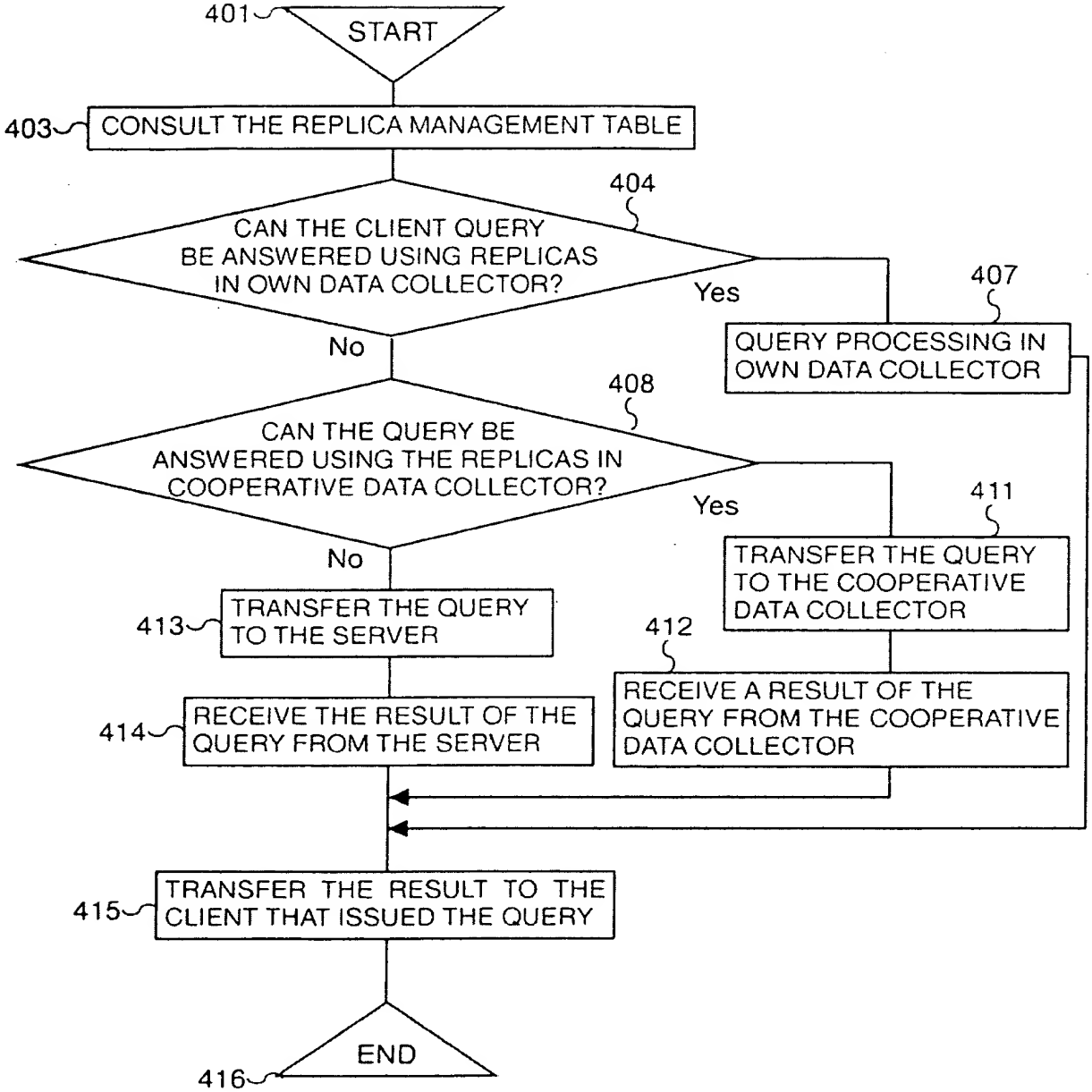

Fig. 5

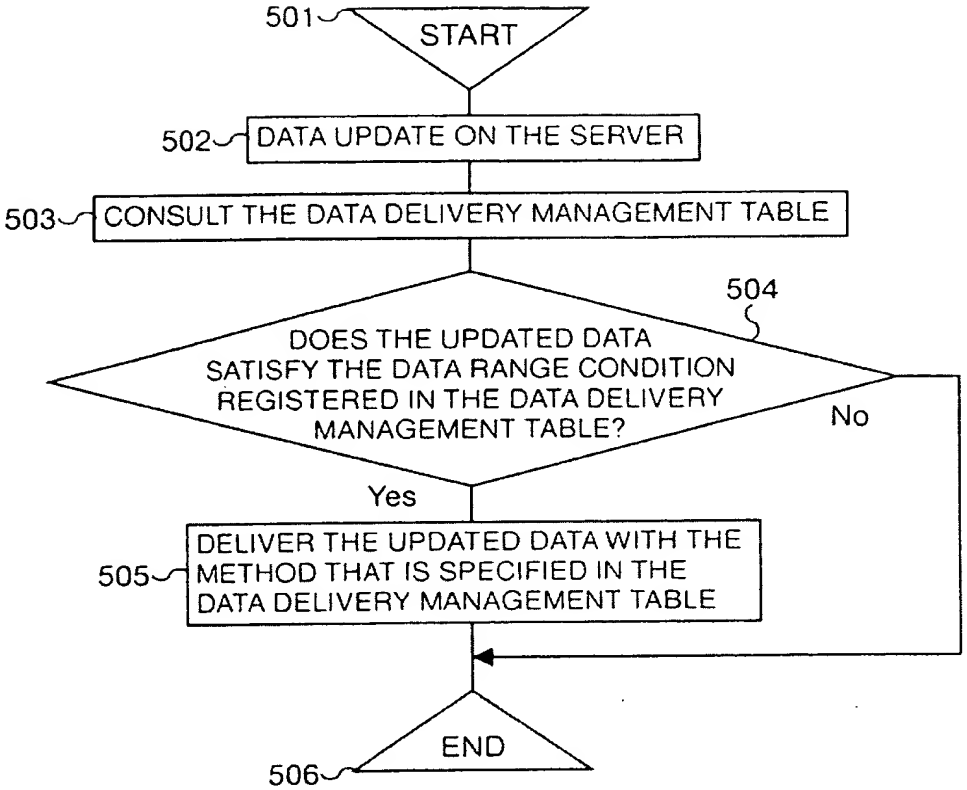

Fig. 6

REPLICA CREATION REQUEST

601 DATA RANGE	603 DATA QUALITY	604 DELIVERY METHOD
ORDER(ORDER_ID, PRICE, CUSTOMER_ID) PRICE>=10000	-	13:00, PUSH
ORDER(ORDER_ID, PRICE, CUSTOMER_ID), 5000<=PRICE<=8000	FRESH(ORDER, 1 HOUR) 605	{1:00, 13:00}, PULL
ORDER(ORDER_ID, PRICE, CUSTOMER_ID), PRICE<=2000	SAMPLE(ORDER, ORDER_ID, 10%) 606	ONCE BETWEEN 21:00 AND 23:00, PULL
SALESDETAIL(ORDER_ID, SHIPDATE, ORDER_AMOUNT), SHIPDATE>=1990/01/01	TOP-N(SALESDATAIL, ORDER_AMOUNT, 100) 607	ONCE PER 1 HOUR, PULL
...	...	...

Fig. 7

DATA TYPE	DATA QUALITY ADJUSTMENT METHOD
RELATIONAL DATABASE RECORD	RECORD SAMPLING, COLUMN PROJECTION
DOCUMENT	KEYWORD EXTRACTION, SUMMARY CREATION
IMAGE	IMAGE COMPRESSION, IMAGE FORMAT CONVERSION, EXTRACT OUTLINE, REDUCE THE NUMBER OF COLORS, REDUCE RESOLUTION, MAKE IMAGE SIZE SMALLER
MOVIE	REDUCE FRAME RATE, IMAGE COMPRESSION IN A FRAME
SOUND	CHANGE SAMPLING RATE, CONVERT TO CHARACTER INFORMATION

Fig. 8

REPLICA MANAGEMENT

803	802	804	805	806
REPLICA DESCRIPTION		REPLICA LOCATION	SERVER LOCATION	DELIVERY METHOD
DATA RANGE ~801	DATA QUALITY			
ORDER(ORDER_ID, PRICE, CUSTOMER_ID), PRICE>=10000	-	DATA COLLECTOR (1)	SERVER (1)	13:00, PUSH
ORDER(ORDER_ID, PRICE, CUSTOMER_ID), PRICE>=10000	807 - 808	DATA COLLECTOR (3)	SERVER (1)	{1:00, 13:00}, PULL
ORDER(ORDER_ID, PRICE), PRICE<=3000	-	DATA COLLECTOR (2)	SERVER (2)	12:00, PUSH
ORDER(ORDER_ID, PRICE), 3000<=PRICE<=5000	SAMPLE(ORDER, ORDER_ID, 10%)	DATA COLLECTOR (2)	SERVER (2)	ONCE PER 2 HOURS, PULL

Fig. 9

DELIVERY DATA MANAGEMENT TABLE

901 DATA RANGE	902 DATA QUALITY	903 DELIVERY DESTINATION	904 DELIVERY METHOD	
ORDER(ORDER_ID, PRICE, CUSTOMER_ID), PRICE>=10000	-	DATA COLLECTOR (1)	13:00, PUSH	905
ORDER(ORDER_ID, PRICE, CUSTOMER_ID), PRICE>=10000	-	DATA COLLECTOR (3)	{1:00, 13:00}, PUSH	906
ORDER(ORDER_ID, PRICE, CUSTOMER_ID), PRICE>=50000	TOP-N(ORDER, PRICE, 10)	DATA COLLECTOR (7)	ONCE PER 1 HOUR, PULL	
...	...		...	

INSERT DATA

(ORDER_ID, PRICE, CUSTOMER_ID) = (10005, 12500, 256) 907

Fig. 10 (A)

(A) DELIVERY CREATION REQUEST

DATA RANGE	DATA QUALITY	DELIVERY METHOD	
ORDER(ORDER_ID, PRICE, CUSTOMER_ID) PRICE>=10000	-	13:00, PUSH	1001
ORDER(ORDER_ID, PRICE, CUSTOMER_ID), 5000<=PRICE<=8000	FRESH(ORDER, 1 HOUR)	{1:00, 13:00}, PUSH	
SALESDETAIL(ORDER_ID, SHIPDATE, ORDER_AMOUNT), SHIPDATE>=1990/01/01	-	ONCE PER 1 HOUR, PULL	1002
...	...	...	

Fig. 10 (B)

(B) SERVER REPLY

SERVER REPLY	DATA RANGE	DATA QUALITY	DELIVERY METHOD	
ACCEPT	-	-	13:00, PUSH	1003
ACCEPT	-	-	{1:00, 13:00}, PUSH	
CONDITIONALLY ACCEPT	SALESDETAIL(ORDER_ID, SHIPDATE, ORDER_AMOUNT), SHIPDATE>=1994/01/01	-	ONCE PER 2 HOURS, PULL	1004
...	...	...	...	

Fig. 11

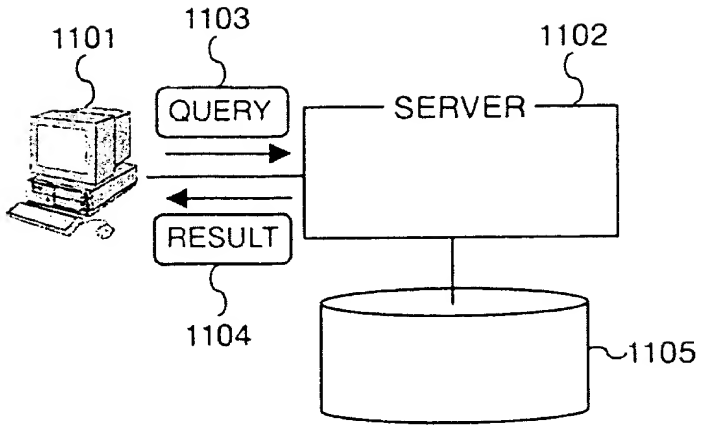

Fig. 12

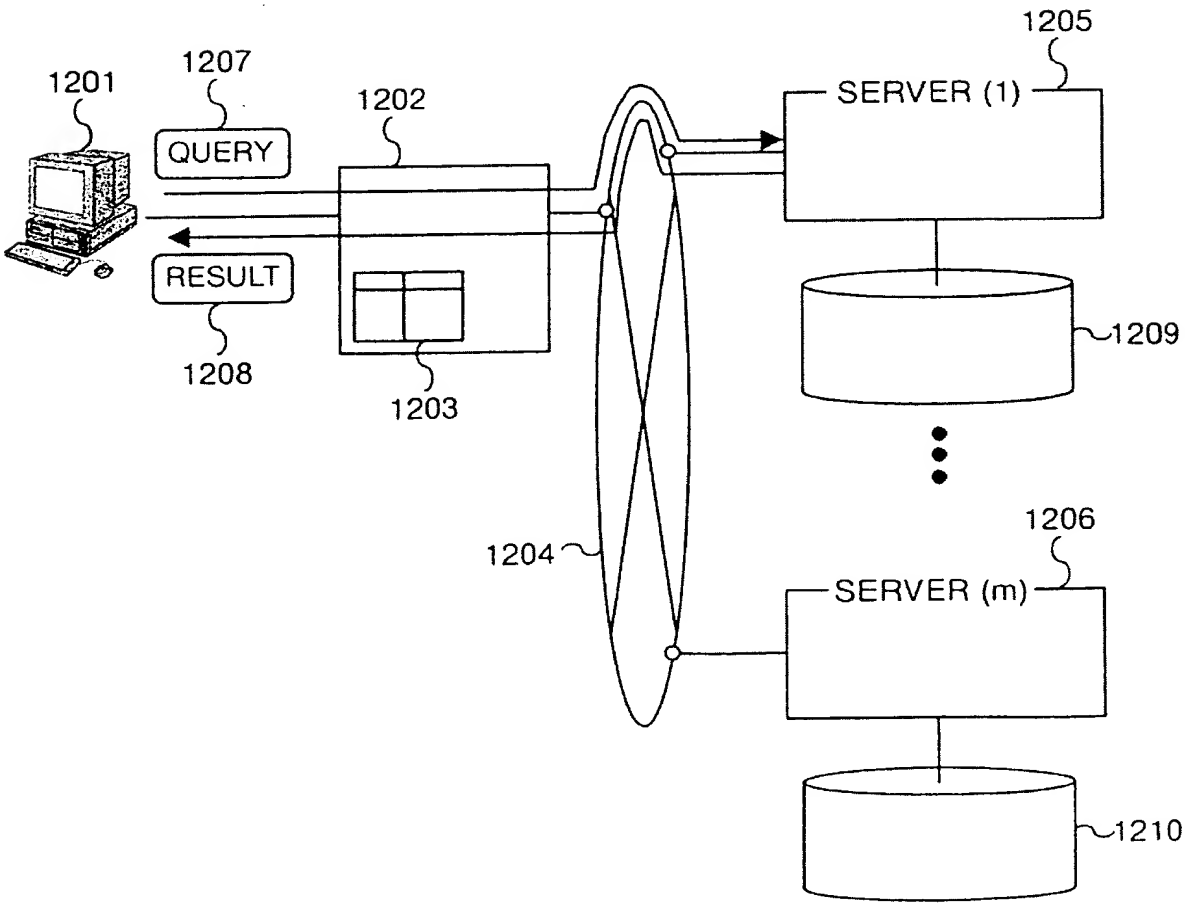

Fig. 13

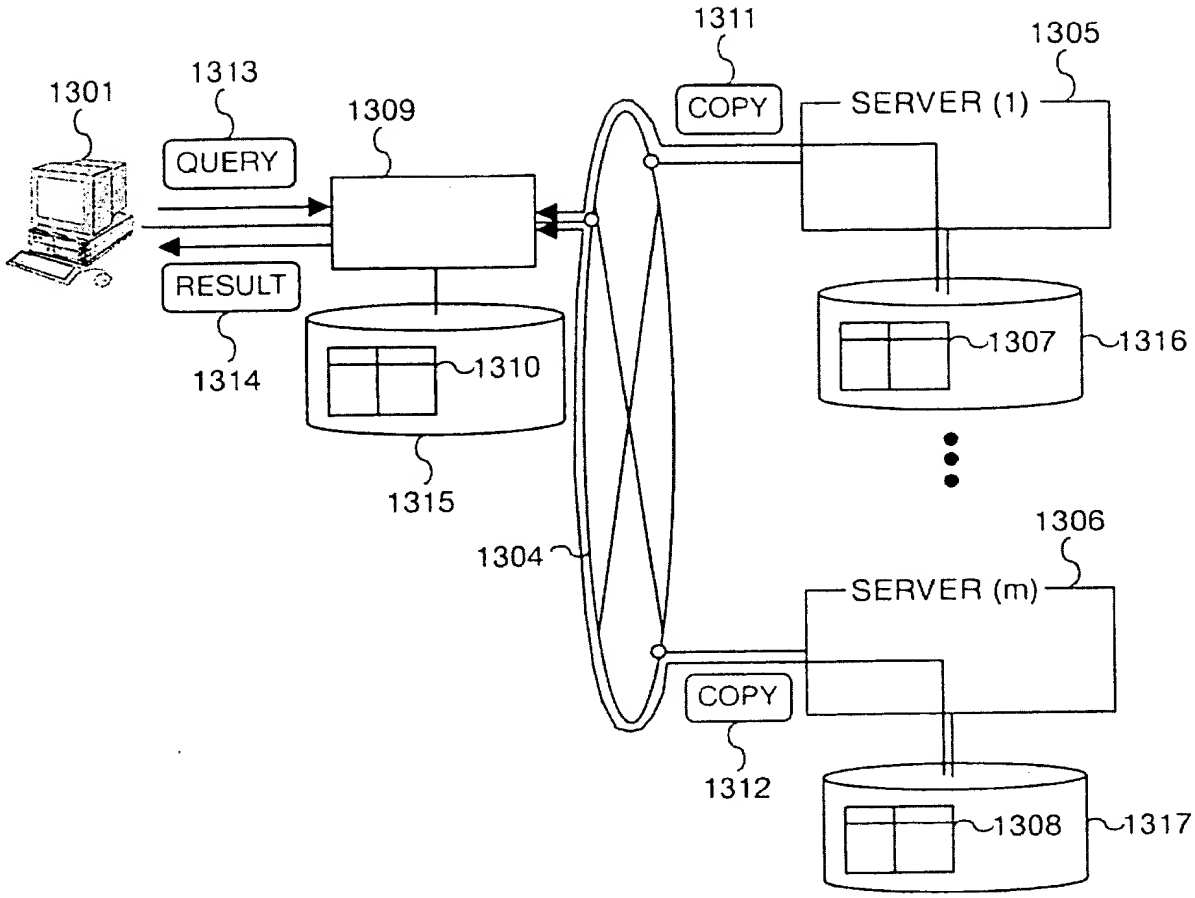

Fig. 14

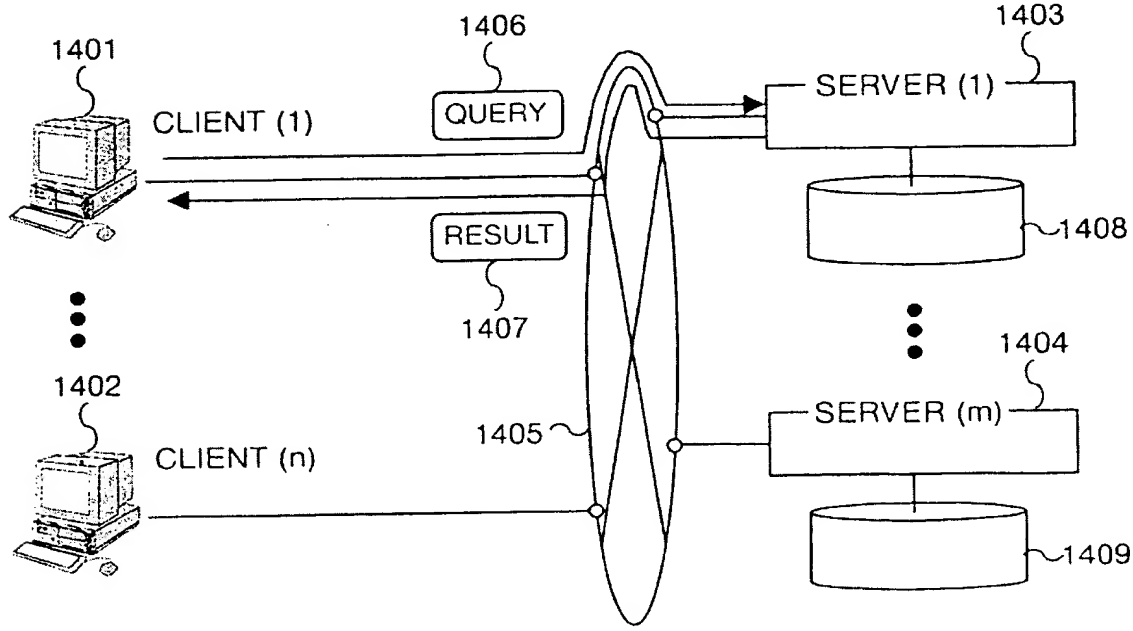

Fig. 15

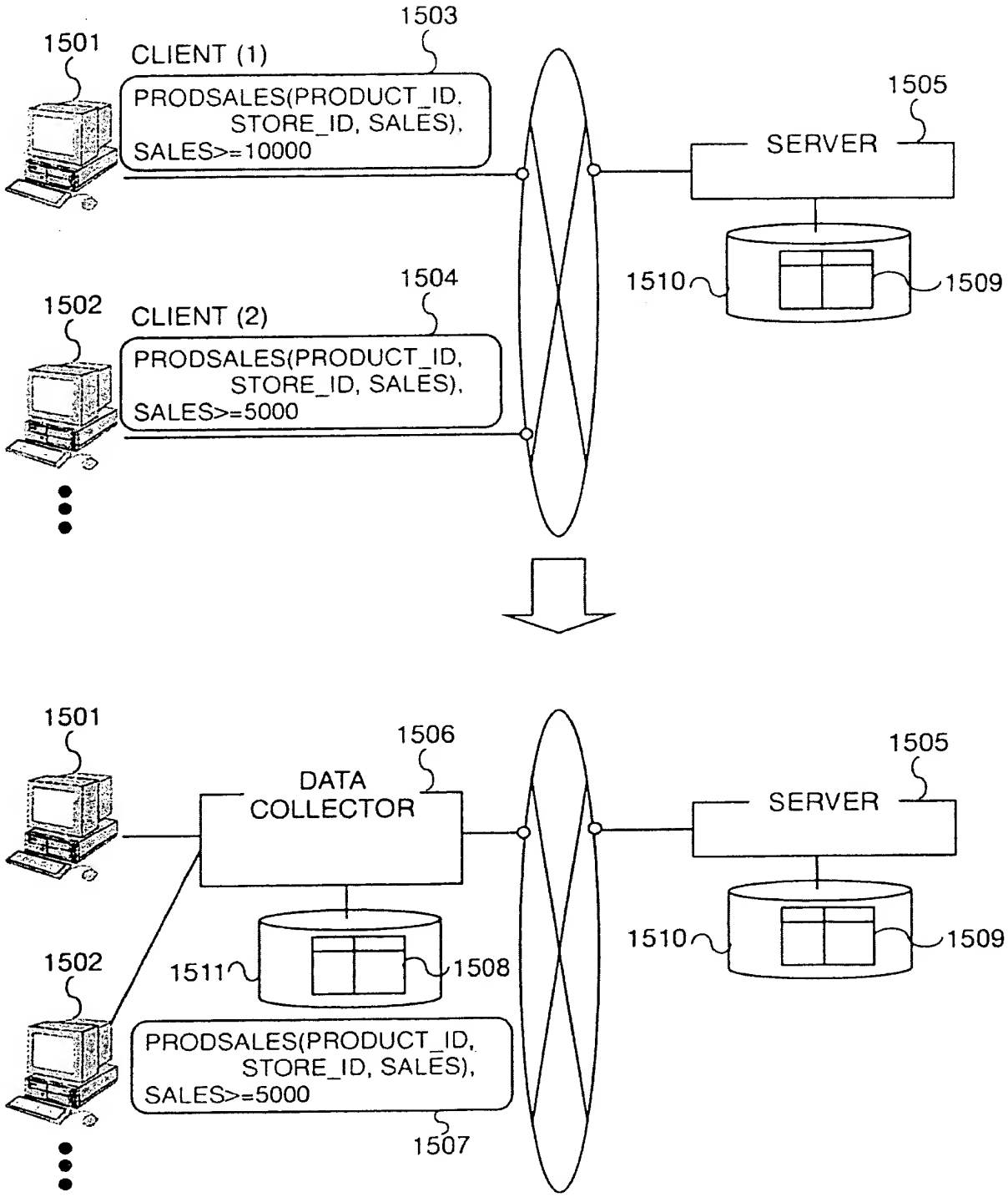

Fig. 16

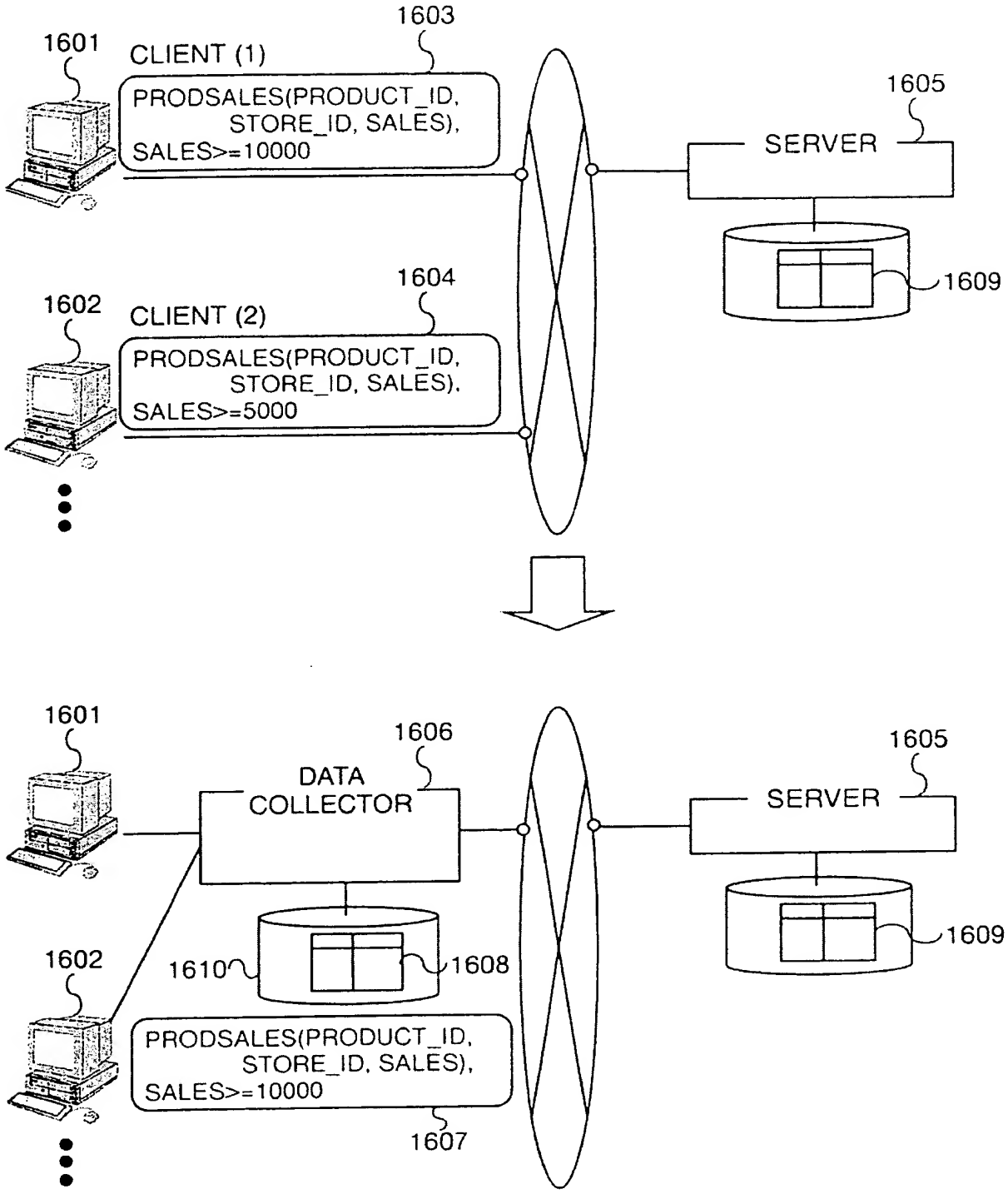

Fig. 17

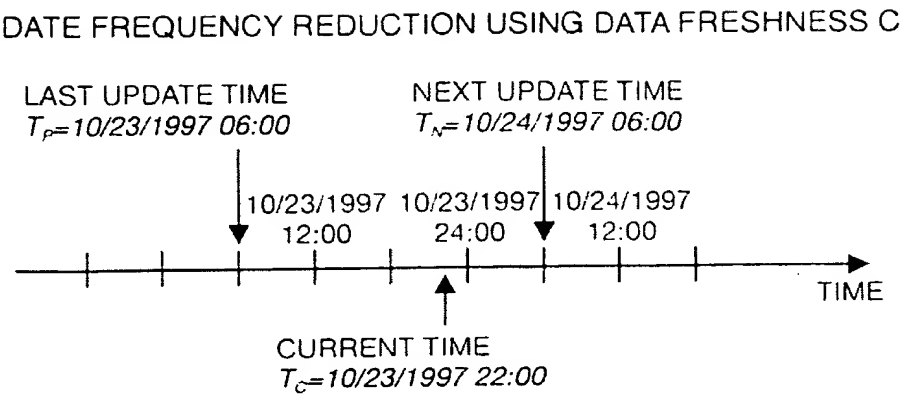

Fig. 19

DATA RANGE	DATA QUALITY	DELIVERY METHOD	
ORDER(ORDER_ID, PRICE, CUSTOMER_ID) PRICE>=20000	-	ONCE BETWEEN 11:00 AND 15:00, PUSH	1901
ORDER(ORDER_ID, PRICE, CUSTOMER_ID), PRICE<=2000	-	ONCE PER 1 DAY, PUSH	1902
ORDER(ORDER_ID, PRICE, CUSTOMER_ID), PRICE<=2000	SAMPLE(ORDER, ORDER_ID, 10%)	ONCE BETWEEN 21:00 AND 23:00, PULL	
SALESDETAIL(ORDER_ID, SHIPDATE, ORDER_AMOUNT), SHIPDATE>=1990/01/01	TOP-N(SALESDETAIL, ORDER_AMOUNT, 100)	ONCE PER 1 HOUR, PULL	
...	...	...	

Fig. 18